



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

09/824,330

04/02/2001

James Michael Nelson

56081USA8A.002

9412

32692

7590

02/11/2004

3M INNOVATIVE PROPERTIES COMPANY
PO BOX 33427
ST. PAUL, MN. 55133-3427

EXAMINER

HANDY, DWAYNE K

ART UNIT

PAPER NUMBER

1743

DATE MAILED: 02/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

A-9

Office Action Summary

Application No.

09/824,330

Applicant(s)

NELSON ET AL.

Examiner

Dwayne K Handy

Art Unit

1743

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: |

Art Unit: 1743

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 8, 10 and 12 were previously rejected under 35 U.S.C. 102(e) as being anticipated by Moore et al. (6,224,832).

Claims 1-4 and 8-13 were previously rejected under 35 U.S.C. 102(e) as being anticipated by Freitag et al. (6,566,461).

Claims 1-3, 8-10 and 12 were previously rejected under 35 U.S.C. 102(e) as being anticipated by Flanagan et al. (2003/0055295).

These rejections have been lifted in response to applicant's arguments submitted 11/06/2003. Please see "Response to Arguments" below.

3. Claims 1, 2, and 8-12 are rejected under 35 U.S.C. 102(e) as being anticipated by Bergh et al. (2002/0170976). This rejection was also made in the previous Office Action sent by the Examiner and has NOT been removed. Again, please see "Response to Arguments" below.

Inventorship

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Art Unit: 1743

6. Claims 3, 4 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bergh et al. (2002/0170976) in view of Freitag et al. (6,566,461). Bergh teaches every element of claims 3, 4 and 13 except for reacting polymeric materials and stirred tube reactor. Freitag et al. (6,566,461) teach a method for continuous or semi-continuous parallel reactions. The basic methods of the invention are recited in the claims and include providing a continuous reactor with a plurality of continuous vessels, initiating a reaction in each vessel and feeding one or more components into each of the plurality of vessels. The basic embodiment of the reactor system is shown in Figures 1-3 and described in columns 2-3. Mixing reactors are taught in column 3, lines 52-60. Reaction control by mixing is recited in column 14, lines 35-53. Freitag discloses a wide variety of reaction types which may be conducted using their method in column 19, lines 40-63 - including coordination reactions. It would have been obvious to one of ordinary skill in the art to combine the teachings of Freitag with the method of Bergh. Both Bergh and Freitag teach the use of array of tubular reactors for performing chemical reactions and examining the products. Bergh also mentions catalyst studies which Freitag states may be used in polymeric reactions. One would add the step of performing polymeric reactions for the purpose of modeling polymeric reactions in a plug-flow system as taught by Bergh. One would add the mixing step to examine the effects of mixing on the reaction as disclosed by Freitag.

Art Unit: 1743

7. Claims 5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bergh et al. (2002/0170976) in view of Priddy et al. (4,572,819). Bergh teaches every element of the method of claims 5 and 7 except for the use of an extruder in the reaction. Priddy et al. teach an apparatus for anionic polymerization wherein the molecular weight of the polymer is closely controlled. In Example 2, Priddy discloses the use of an extruder in making their polymer. The extruder is used to remove the polymer from the reactor in strand form so that the polymer may be examined or used. It would have been obvious to one of ordinary skill in the art to combine the use of an extruder with the method of Bergh. Extruders are commonly used to remove solid materials during the formation of polymers from liquid precursors. It would be advantageous to use an extruder for removal of products in a continuous system for examining reaction products.

8. Claims 3 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bergh et al. (2002/0170976) in view of Austin et al. (2002/0099137). Bergh teaches every element of the method of claims 3 and 6 except for the use of a static mixer in mixing the reactants. Austin et al. teach a continuous process for the manufacture of a silicone copolymer in a static mixer plug-flow reactor. The process is enhanced through the use of a static mixing element which creates eddies and vortices of sufficient intensity that a biphasic liquid mixture of reactants is formed and one phase disperses into another to provide intimate contact between the two phases to allow the reaction to proceed. It would have been obvious to one of ordinary skill in the art to combine the

Art Unit: 1743

teachings of Austin with the reaction methods of Austin. Bergh teaches a method of performing reactions in a plug-flow reactor system which contains an array of reactors. Austin teaches the examination of multiple polymer reactions in a plug flow system (see Examples). It would be obvious, then, to perform the polymerization reactions of Austin in the system of Bergh. One would add the static mixer of Austin to take advantage of these mixing properties. This feature would be desirable in a polymerization reaction system.

9. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bergh et al. (2002/0170976) in view of Freitag as applied to claims 3, 4 and 13 above and further in view of Citron et al. (2002/0026016). Bergh and Freitag, as described in paragraph 6 above, teach every element of claim 14 except for the use of a metallocene catalyst. Citron et al. teach a process for the production of polyolefin copolymers in a plug flow reactor. As stated by Citron on page 6 [100, 101, 102], the preferred catalyst for the process of Citron uses a metallocene catalyst. It would have been obvious to one of ordinary skill in the art to combine the use of the metallocene catalyst from Citron with the combined teachings of Bergh and Freitag. Freitag already teaches coordination reactions, but does not cite the use of a metallocene catalyst. One would add the metallocene catalyst to perform copolymerizations as described by Citron.

Response to Arguments

10. Applicant's arguments, filed 11/06/2003, with respect to the 102 rejections involving the references "Moore", "Freitag", and "Flanagan" have been fully considered and are persuasive. The rejections of the claims under these references have been withdrawn. The 103 rejections that involved the reference "Freitag" as the primary reference have been withdrawn. In short, the Examiner agrees with applicant's assertion that these references do not teach the use of plug flow reactors as required by the instant claims. These same arguments when directed at the reference "Bergh" have been fully considered and are **not** persuasive however. Applicant has argued that Bergh does not teach the use of a plug flow reactor because "in the Berg system the products are separated by space not time". The Examiner respectfully disagrees with applicant and asserts that Bergh does indeed teach plug flow reactor use. While it may be true that Bergh provides products that are separated by space, this is because Bergh provides an array of reactors! This does not preclude each individual reactor from being a plug flow reactor, however. In fact, the Examiner directs applicant to page 6 of Bergh, paragraph [0032] which clearly discloses their reactors being used as plug-flow reactors. Therefore, the 102 rejections under Bergh remain. This reference now also forms the basis for the 103 rejections provided in this action as well.

Conclusion


11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dwayne K Handy whose telephone number is (571)-

Art Unit: 1743

272-1259. The examiner can normally be reached on M-F 8:00-4:30. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on (571)-272-1267.

DKH

February 9, 2004


Jill Warden
Supervisory Patent Examiner
Technology Center 1700